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OCCUPATIONAL MOBILITY OF UNEMPLOYED WORKERS

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ABSTRACT: This paper presents models of occupational mobility in the labour market with an application into unemployment duration using Finnish microeconomic data. It is shown that the probability of changing occupations and the proportion of unemployed persons who will never change occupations can be estimated using censored unemployment duration data. The occupations are classified on a very detailed level in the data. The models are based on a Gompertz distribution which takes into occount the fact that some of the unemployed persons will not change occupations. Allowance for neglected heterogeneity is made assuming that the effect of omitted variables has a gamma distribution.

KEY WORDS: Unemployment duration, occupational mobility.

1. Introduction

This paper is concerned with the estimation of occupational mobility of unemployed persons in the labour market using Finnish microeconomic data. Occupations in the data are measured on a very detailed level. The most accurate definition of occupations includes 1320 occupations. The models of leaving unemployment have been widely studied in search theoretical and econometric literature. However, the important feature of leaving unemployment by changing occupations has not received notable attention. The unemployed person makes a two-stage decision, firstly to choose the occupation to search and secondly to accept a job within that occupational category. In this paper econometric models for changing occupations are presented and estimated using duration data.

There are some empirical studies on the educational and occupational choices, which may be regarded as an investment decisions. Rosen and Willis (1979) test the human-capital maximizing hypothesis in the context of the educational choices of a panel of individuals in the United States. Similar work is done by Pissarides (1981, 1982) and Micklewright (1987) for the United Kingdom. Applications to occupational upgrading have been made by Grimes (1986) and to occupational choice decisions by Boskin (1974) and Schmidt and Strauss (1975). Stone (1982) has studied the decision of changing occupations using binary logit models with duration of unemployment as an explanatory variable. Robertson and Symons (1990) follow these papers by estimating a logit model for the rough classification of occupations: professional, skilled and unskilled. Our paper extends these papers by studying the occupational mobility of unemployed persons and the effect of earnings and training for further employment with other factors in that decision. Duration models are used in our study because they are more efficient than the discrete choice models, since continuous variables include more information than 0-1-valued variables.

The probability of leaving unemployment by changing occupations may be so low for some of the persons that they will never change occupations. The proportions of these people are estimated from the data, where the completed spells of unemployment are not observed for all the observations. If some persons will never change occupations, there is a special requirement for the survivor function. It should be defective, i.e. the survivor function should allow a possibility of asymptotically decreasing to a positive value instead of zero. A Gompertz distribution allows for the defectiveness and gives estimates for the proportion of persons who will never change occupations. A Gompertz model of occupational mobility is estimated using the microeconomic data.

In an econometric analysis relevant variables will often be omitted, either because they are unmeasurable or because their importance is unsuspected. It is well known that neglected heterogeneity biases the parameter estimates (Lancaster (1979), Nickell (1979)). The purpose of this paper is to take the heterogeneity into account in estimation. A Gompertz model allowing for neglected heterogeneity is derived and estimated assuming that the effect of omitted variables has a gamma distribution across individuals.

2. Parametric duration models of unemployment

2.1. A general form of the duration model

A general form for the likelihood function of parametric duration models with censored data is presented before the parametrization of the distribution. The duration of unemployment from the date of entry into unemployment until the date of re-employment by changing occupation is the dependent variable. The probability of the joint event of re-employment and changing occupation is estimated. Let us consider independent pairs of independent random variables T and Z, where T is the duration variable of primary interest and Z is a censoring variable. A censoring time or a duration time and a censoring indicator are observed as

$$t = \min(T, Z)$$

$$\bar{c} = \begin{cases} 1 \text{ if } T \geq Z \\ 0 \text{ otherwise.} \end{cases}$$

An indicator of a completed spell of unemployment until changing occupation is defined as $c = 1 - \bar{c}$. If the person has become employed by changing occupation, the indicator $c = 1$, otherwise $c = 0$. The survivor function of T is equal to one minus the distribution function of the duration variable, which can be written as

$$S(t) = e^{-I(t)}$$

and the density function can be written as

$$f(t) = h(t)e^{-I(t)}$$

for $t \geq 0$. $I(t)$ is the integrated hazard

$$I(t) = \int_0^t h(\tau)d\tau.$$

The likelihood contribution of an individual is then

$$L(\theta) = f(t)^c S(t)^{\bar{c}},$$

which can be written in view of the above definitions as

$$L(\theta) = h(t)^c e^{-I(t)}, \qquad (1)$$

which is a general form for the duration models with right censored data. The distribution of unemployment duration has to be specified. To estimate the unknown parameters the hazard function and integrated hazard are substituted into the likelihood function (1).

2.2. A Gompertz model allowing for gamma heterogeneity

Econometric duration models are specified in terms of the hazard function $h(t)$, which in this case is the conditional probability that the person becomes employed by changing occupation at t given that he still is unemployed. A usually applied specification is the proportional hazard model, where the hazard function factors into the product of a function of duration time t and a function of the regressors **x**

$$h(t) = h_0(t)h_1(\mathbf{x}),$$

where $h_0(t)$ is called the baseline hazard.

A very seldom studied feature of unemployment spells is that unemployed persons leave the ranks of the unemployed in different ways. This study is interested in persons leaving unemployment by changing occupations. These kinds of observations are complete observations. The time between the date of becoming unemployed and the date of leaving unemployment by changing occupation is the duration variable of interest.

Some of the persons leave unemployment by staying in their previous occupations and some of them are lost in the follow-up. Furthermore, some of them will not return back to work. They may leave the labour force. The reasons for that may be retirement, unemployment pension or even death. These kinds of observations are censored observations, i.e. the complete spells of the duration variable of interest is not observed.

The feature of unemployment spells that some of the persons will not change occupations is allowed for using defective distributions. Such distributions are by no means worse than others, but it means that there is always mass in the survivor function regardless of how large the duration time is. Therefore it is reasonable to assume a Gompertz distribution, which is an extension of the exponential distribution. The baseline hazard of a Gompertz distribution is $h_0(t) = \exp(t\theta)$. With analogy to biological studies the Weibull model has been used for modeling total mortality (Burch, Jackson, Fairpo, Murray, 1973) and the Gompertz model for cause-specific mortality (Dix, Cohen and Flannery, 1980).

The hazard function of the two parametric Gompertz distributions may be written as follows

$$h(t) = \phi e^{t\theta}.$$

The hazard function varies as an exponential function of time starting from ϕ. The explanatory variables x are introduced into the model in a log-linear form $\phi = e^{x\beta}$, where β is the vector of structural parameters. The elasticities of explanatory variables with respect to the hazard function in a logarithmic form are $\delta\log[h(t)]/\delta\log(x) = x\beta$. θ is the parameter of duration dependence. The survivor, density and hazard functions of the Gompertz distribution can be written respectively as

$$S(t) = e^{-I(t)}$$

$$f(t) = e^{x\beta + t\theta - I(t)}$$

$$h(t) = e^{x\beta + t\theta},$$

where I(t) is the integrated hazard

$$I(t) = e^{x\beta}(e^{t\theta} - 1)/\theta. \qquad (2)$$

It is inevitable that in an econometric analysis relevant variables will be omitted, either because they are unmeasurable or because their importance is unsuspected. Unobserved heterogeneity is widely discussed in the econometric literature. Lancaster (1979) assumed a parametric functional form for the pattern of heterogeneity. The gamma mixing distribution was chosen because it is analytically simple to use and it provides quite a flexible model for the distribution of the heterogeneity component. Lancaster found that the estimated parameters were biased towards zero if the unobserved heterogeneity was not controlled for. Even if the omitted variables are uncorrelated with those which are included in the model, the parameters will be biased towards zero (Nickell, 1979). The method of correcting for gamma heterogeneity has been widely used with exponential and Weibull duration distributions [e.g. Kooreman and Ridder (1983), Newman and McCulloch (1984), Narendranathan, Nickell and Stern (1985), Engström and Löfgren (1987)]. In this paper the gamma heterogeneity assumption has been extended to the Gompertz distribution.

Suppose the individuals of the sample differ to some degree with respect to some unobservable variable, say, motivation v. Each individual has his own v and hence his own hazard function h(t). Lancaster using data on a stock of unemployed persons assumed that these hazards have a gamma distribution. The conditional hazard in a Gompertz model allowing for gamma heterogeneity is

$$h(t|v) = v\, h(t),$$

where v has a gamma density

$$g(v) = \frac{\epsilon^{\mu}}{\Gamma(\mu)} v^{\mu-1} e^{-\epsilon v} \quad \text{with} \quad \Gamma(\mu) = \int_0^{\infty} w^{\mu-1} e^{-w} dw.$$

The expected value of the heterogeneity component $E(v) = \mu/\epsilon$ is normalized to one by setting $\epsilon = \mu$ and its variance, i.e. $\sigma^2 = 1/\mu$, is estimated. The marginal survivor function, not conditional on v, is obtained by integrating over the assumed mixing distribution. The density function is obtained from the survivor function by differentiating

$f_g(t) = -\delta S_g(t)/\delta t$ and the hazard function is obtained as a ratio $h_g(t) = f_g(t)/S_g(t)$. The Gompertz distribution allowing for unobserved gamma heterogeneity across individuals gives the following survivor, density and hazard functions

$$S_g(t) = [1 + \sigma^2 I(t)]^{-1/\sigma^2}$$

$$f_g(t) = h(t)[1 + \sigma^2 I(t)]^{-1/\sigma^2 - 1}$$

$$h_g(t) = h(t)[1 + \sigma^2 I(t)]^{-1},$$

where I(t) is the integrated hazard of the original Gompertz distribution (2). The integrated hazard with gamma heterogeneity can be written as $I_g(t) = -\log[S_g(t)]$, which can be rewritten in an other form as follows

$$I_g(t) = 1/\sigma^2 \log[1 + \sigma^2 I(t)]. \qquad (3)$$

The integrated hazards I(t) and $I_g(t)$ are the generalized residuals of these models in the sense of Cox and Snell (1968).

To write the likelihood functions and estimate the unknown parameters, the hazard functions and the integrated hazards of the two models presented are substituted into the log likelihood function (1). For completeness the log likelihood functions which are maximized are presented. The likelihood function of the Gompertz model can be written as

$$L(\theta,\beta) = \sum_{i=1}^{n} c(x\beta + t\theta) - e^{x\beta}(e^{t\theta} - 1)/\theta \tag{4}$$

and the log likelihood function of the Gompertz model with gamma heterogeneity can be written as

$$L(\theta,\beta) = \sum_{i=1}^{n} c(x\beta + t\theta) - (c + 1/\sigma^2)\log[1 + \sigma^2 e^{x\beta}(e^{t\theta} - 1)/\theta]. \tag{5}$$

To see the shape of the survivor function of the Gompertz model, consider their limits:

If $\theta < 0$, then $\lim_{t\to\infty} S(t) = e^{e^{x\beta}/\theta}$.

If $\theta > 0$, then $\lim_{t\to\infty} S(t) = 0$.

The limits of survivor functions after allowing for gamma heterogeneity can be written as follows:

If $\theta < 0$, then $\lim_{t\to\infty} S_g(t) = [1 - \sigma^2 e^{x\beta}/\theta]^{-1/\sigma^2}$.

If $\theta > 0$, then $\lim_{t\to\infty} S_g(t) = 0$.

The limits of the survivor functions give estimates for the proportion of individuals who will never change occupations.

3. The data

Retrospective data can be misleading because people forget and make mistakes. Therefore the sample on 2077 Finnish unemployed persons used in this study has been taken from the register of the Ministry of Labour. It is more reliable than the data from surveys, since it is not based on interviews. In order to guarantee that the sample would be randomly generated, every hundredth individual was picked from the flow into unemployment during 1985. The individuals were then followed until the end of their unemployment spells but at most until the end of 1986. The data set is fairly rich in individual and market specific information. The description of the variables with their means are presented in the Appendix and reference for further details regarding the data should be made to Kettunen (1989, 1990).

Each occupation is measured using a 5-digit code in the Nordic Occupational Classification. The classification is such that the occupations near each other form subgroups, which are collected into groups, and the groups are collected into main groups. The first, 1-2, 1-3 and 1-5 digits classify 10, 84, 305 and 1320 groups or occupations respectively. There are 103, 142, 161 and 202 completed spells on the different levels, i.e. the duration between the date of becoming unemployed and the date of changing occupation was observed. The rest of the observations are censored. People change their occupations most often on the most accurate 5-digit level, i.e. when the occupations do not differ very much from each other. It is an empirical question on which level the occupational mobility is examined.

The actuarial life table analysis based on the method of Cutler and Ederer (1958) is used to describe the data on the most accurate 5-digit level. The life table of occupational mobility is reported in Table 1. About 6 % of the unemployed persons left unemployment by changing occupations during the first ten weeks. About 90 % of the observations were censored, i.e. changing occupations was not observed. The density and hazard functions are decreasing in the life tables except that they are increasing after a 30-week unemployment period. According to the Finnish unemployment insurance (UI) system, the unemployed persons do not have to accept an offer made by the Employment Service during the first few months if they are not qualified by schooling or experience for the job. The three-month rule of labour mobility is applied also to the geographical mobility. After the first three months the UI system seems to have a positive effect on the probability of changing occupation. The positive effect has about a four months lag, which is most likely due to training for a new occupation.

Table 1. The life table of occupational mobility

Interval in weeks	Exiting	Conditional proportion of exiting	Cen-sored	Risk set	Density	Cum. survival	Hazard
					Std.errors in parentheses		
0 -	95	0.054	661	1746.5	0.0109	1.0000	0.0112
					(0.0011)	(0.0000)	(0.0011)
5 -	39	0.035	417	1112.5	0.0066	0.9456	0.0071
					(0.0010)	(0.0054)	(0.0011)
10 -	20	0.026	190	770.0	0.0047	0.9125	0.0053
					(0.0011)	(0.0074)	(0.0012)
15 -	15	0.026	144	583.0	0.0046	0.8888	0.0052
					(0.0012)	(0.0089)	(0.0013)
20 -	10	0.022	94	449.0	0.0039	0.8659	0.0045
					(0.0012)	(0.0104)	(0.0014)
25 -	6	0.017	76	354.0	0.0029	0.8466	0.0034
					(0.0012)	(0.0119)	(0.0014)
30 -	6	0.021	45	287.5	0.0035	0.8323	0.0042
					(0.0014)	(0.0130)	(0.0017)
35 -	5	0.020	27	245.5	0.0033	0.8149	0.0041
					(0.0015)	(0.0146)	(0.0018)
40 -	6	0.051	217	118.5	0.0007	0.7983	0.0009
					(0.0003)	(0.0160)	(0.0004)
100 -	0	0.000	4	2.0	.	0.7579	.
					.	(0.0221)	.

4. The results

The results of estimations are presented in Tables 2 and 3. The parameter estimates of duration dependence θ are statistically significant and negative indicating that the hazard function is falling and that the survivor function is asymptotically decreasing to a positive value. Hence some of the persons will never change occupations. When gamma heterogeneity was introduced into the model the negative duration dependence decreases as was expected. Another implication of the negativeness of θ is that the expected value of the duration for the sample is not defined, because some persons do not change occupations. This fact can be seen e.g. in Broadbent (1958) and Lee (1980). The constant of the model, where the effect of omitted variables is captured, decreases and the absolute values of the statistically significant parameter estimates increase when gamma heterogeneity is introduced into the model as was expected.

The characteristics that are positively correlated with the probability of changing occupation are those that make the unemployed person's skills less occupation-specific. Many of the explanatory variables have significant effects on the probability of changing occupations. Age is a statistically significant factor. Old people are not very flexible in changing occupations. Education can be regarded as an investment decision on the part of the individual, as noted by Becker (1964). Training for further employment given by the government seems to have a positive effect on the probability of changing occupations as is expected. Members of the UI funds are often skilled workers and therefore they are more prone than the non-members to accept other occupations. The persons leaving school or the army do not differ in this respect from other persons.

The demand for labour in the area of residence of unemployed persons seems to increase the probability of changing occupation, and the occupational demand in the whole country seem to strongly decrease the probability of changing occupations. Assets of the persons are negatively correlated with the probability of changing occupations.

It could be hypothesized that by increasing the reservation wage, UI benefits increase the probability that workers will seek wage offers with the previous occupations rather than wage offers associated with alternative lower-paying occupations. The effects of unemployment benefits are measured using the benefit replacement ratio. The parameter estimate of the replacement ratio took a negative sign, as expected, and the effect is statistically significant after allowing for gamma heterogeneity.

Table 2. **Gompertz models of occupational mobility**

Dependent variable: The lenght of unemployment until changing occupation

	Level of classification of occupations (number of digits)			
	1	2	3	5
θ	-0.027	-0.026	-0.027	-0.027
	(0.009)	(0.007)	(0.007)	(0.006)
Constant	-4.030	-3.635	-3.661	-3.448
	(0.476)	(0.431)	(0.400)	(0.369)
Age	-0.027	-0.025	-0.030	-0.035
	(0.013)	(0.011)	(0.010)	(0.009)
Level of education	0.497	0.262	0.290	0.299
	(0.243)	(0.205)	(0.194)	(0.173)
Training for employment	0.245	0.241	0.241	0.340
	(0.280)	(0.233)	(0.222)	(0.188)
Member of UI fund	0.273	0.253	0.350	0.371
	(0.223)	(0.188)	(0.176)	(0.154)
Came from schooling	-0.122	0.076	0.065	-0.029
	(0.342)	(0.285)	(0.271)	(0.247)
Came from house work	0.163	0.270	0.207	0.079
	(0.341)	(0.277)	(0.265)	(0.248)
Geographical demand	0.717	1.108	1.298	1.129
	(0.862)	(0.687)	(0.637)	(0.569)
Occupational demand	-5.466	-6.064	-4.861	-3.538
	(2.466)	(2.086)	(1.849)	(1.623)
Taxable assets	-1.643	-1.453	-0.610	-0.404
	(0.721)	(0.632)	(0.366)	(0.328)
Replacement ratio	-0.743	-0.743	-0.420	-0.468
	(0.493)	(0.407)	(0.366)	(0.333)
Mean xβ	-5.381	-5.039	-4.865	-4.622
Log likelihood	-658.6	-867.3	-966.8	-1165.2

Table 3. **Gompertz models of occupational mobility allowing for gamma heterogeneity**

Dependent variable: The lenght of unemployment until changing occupation

	Level of classification of occupations (number of digits)			
	1	2	3	5
σ^2	7.720	7.291	6.115	4.346
	(5.393)	(3.862)	(3.306)	(2.305)
θ	-0.003	-0.004	-0.002	-0.002
	(0.018)	(0.017)	(0.016)	(0.014)
Constant	-3.460	-3.011	-3.103	-2.905
	(0.674)	(0.661)	(0.602)	(0.536)
Age	-0.034	-0.033	-0.041	-0.047
	(0.018)	(0.016)	(0.015)	(0.013)
Level of education	0.634	0.296	0.361	0.334
	(0.350)	(0.306)	(0.282)	(0.243)
Training for employment	0.172	0.270	0.267	0.446
	(0.408)	(0.354)	(0.331)	(0.274)
Member of UI fund	0.383	0.394	0.528	0.531
	(0.318)	(0.280)	(0.258)	(0.220)
Came from schooling	-0.246	-0.039	-0.046	-0.186
	(0.459)	(0.416)	(0.388)	(0.340)
Came from house work	0.389	0.511	0.404	0.131
	(0.460)	(0.417)	(0.392)	(0.350)
Geographical demand	0.985	1.844	2.141	1.705
	(1.140)	(0.966)	(0.874)	(0.747)
Occupational demand	-8.099	-8.769	-6.824	-4.600
	(3.366)	(2.957)	(2.505)	(2.167)
Taxable assets	-2.025	-1.920	-0.727	-5.266
	(0.824)	(0.784)	(0.431)	(3.992)
Replacement ratio	-1.065	-1.331	-0.888	-0.971
	(0.674)	(0.604)	(0.340)	(0.472)
Mean xβ	-5.334	-4.975	-4.782	-4.543
Log likelihood	-657.3	-864.6	-964.1	-1162.8

An unemployed person might make job applications in several different occupations. The firms receiving the applications are more likely to offer the job if it is in occupations close to the applicant's training, less likely otherwise. Therefore, the probability that the unemployed person will be offered jobs in his prior occupational group is higher than the probability that he will be offered jobs in other occupational groups.

Table 4 includes estimates of the proportions of the unemployed persons who do not change occupations. The figures have been calculated for an average person in the sample. The limits of the survivor function as the duration time goes to infinity gives the estimates of the proportion of the persons who will never change occupations.

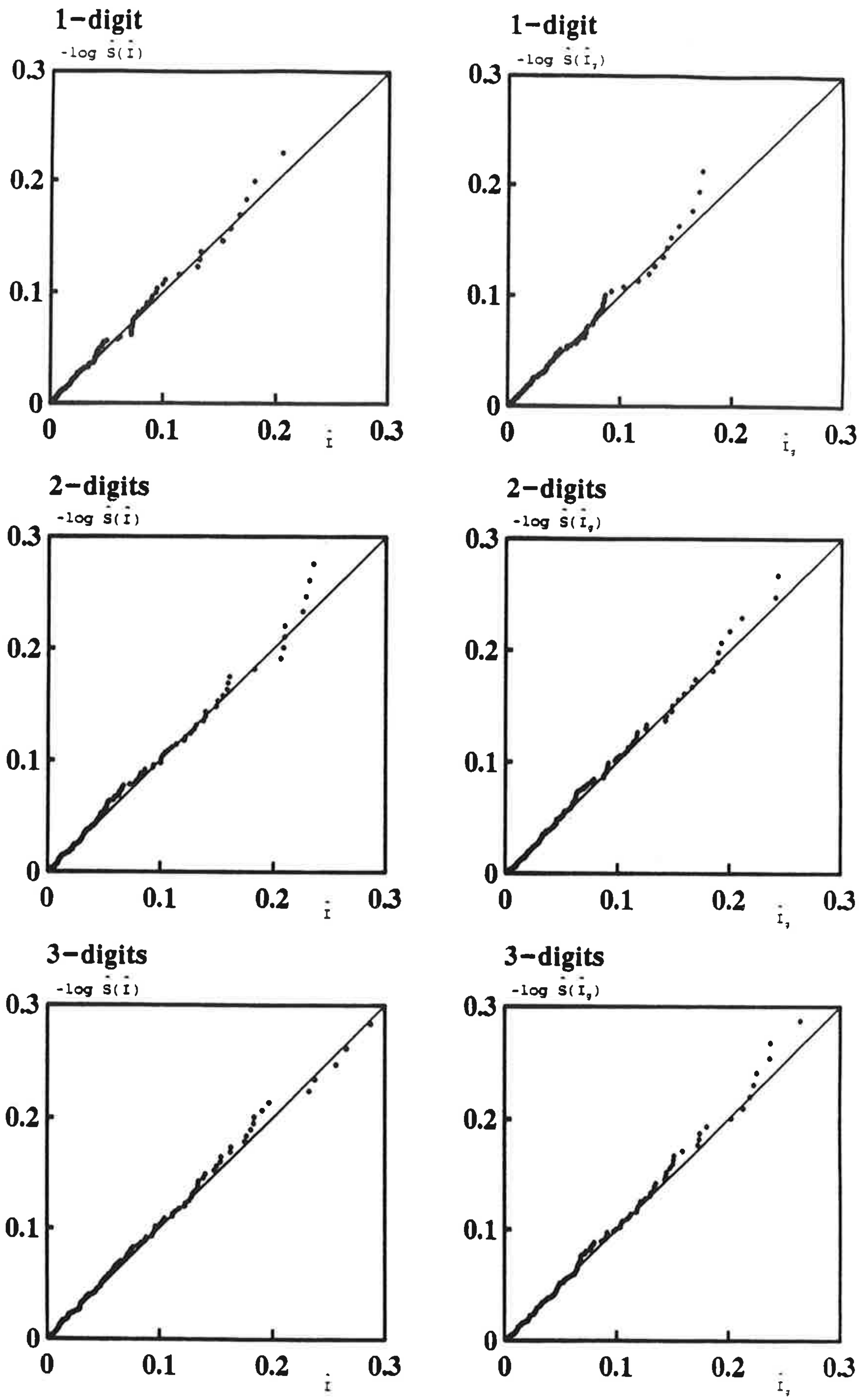
Some important explanatory variables cannot be observed in the data, e.g. the willingness to change occupation and the willingness of firms to offer jobs in other occupations. It is well known that uncontrolled unobservables bias the estimated hazards towards negative duration dependence (Heckman and Singer, 1984, 1986). Consequently it could be expected that after allowing for gamma heterogeneity the estimates of survivor functions would be lower. The estimates of the proportion of persons who do not change occupations vary between 0.84 and 0.69 depending on the level of measurement. The estimates of the survivor functions are lower after taking omitted variables into account. The corresponding proportions are between 0.71 and 0.48 after allowing for gamma heterogeneity.

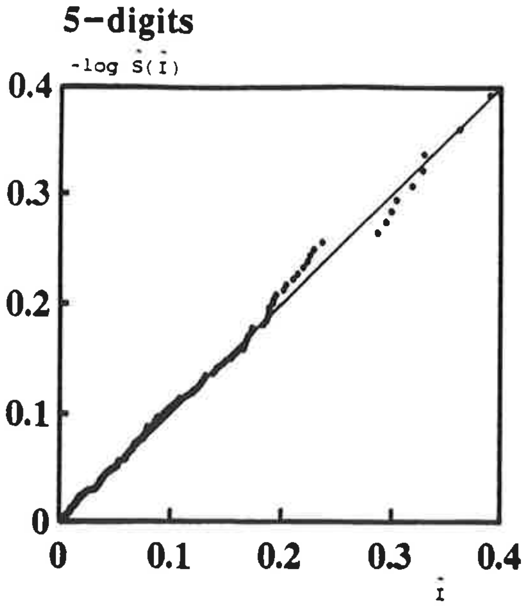
Table 4. The proportions of unemployed persons who will not change occupations

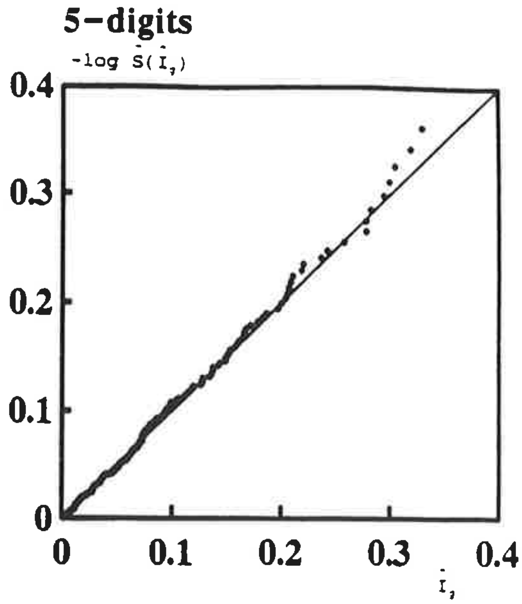
	Level of classification of occupations (number of digits)			
	1	2	3	5
A Gompertz model	0.84	0.78	0.75	0.69
A Gompertz model with gamma heterogeneity	0.71	0.68	0.58	0.48

The model specification was examined using a graphical procedure suggested by Lancaster and Chesher (1985). The product limit procedure allowing for censored data was applied to the integrated hazards in order to estimate the residual survivor functions $\hat{S}(\hat{I})$ and $\hat{S}(\hat{I}_g)$. The plot of the opposite of the logarithm of the residual survivor function should give a 45° line through the origin in large samples, when the model is right. The residual plots are in the Figure 1. They are fairly precisely on the 45° line except for the last few observations.

Fig. 1. Residual plots of Gompertz models




5-digits
-log S(I)
0.4
0.3
0.2
0.1
0
0
0.1
0.2
0.3
0.4
I


5-digits
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0.4
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5. Conclusions

A Gompertz model of occupational mobility of unemployed persons was estimated using Finnish microeconomic data collected from various registers. Completed spells are not observed for all the observations in the data. The model takes into account the censored observations and the feature of unemployment spells that for some of the persons the probability of changing occupations is so low that they will not change occupations. The model gives an estimate of the proportion persons who will never change occupations. The estimate of the proportion of these persons given by a Gompertz model is between 0.84 and 0.69 depending on the level at which the occupation is measured.

Even though the data are rich of explanatory variables and more reliable than data from surveys, there is reason to assume that relevant variables have been omitted from the model. Neglected heterogeneity across individuals was taken into account in estimation. A Gompertz model allowing for gamma heterogeneity was derived and estimated assuming that the effect of omitted variables has a gamma distribution across individuals.

Comparing the results of the two models shows that the model without correcting for heterogeneity gives lower estimates of parameters. The absolute values of parameters increase when heterogeneity is introduced into the model. Furthermore, the Gompertz model gives estimates for the hazard function that are too low. Consequently, the survivor function of the model with gamma heterogeneity is lower and the estimate of the proportion of persons who will never change occupations is between 0.71 and 0.48 depending on the accuracy of measuring occupations. As a final estimate based on the most accurate definitions of occupations and the correction for omitted variables it can be said that nearly half of the persons who become unemployed will never change their occupations.

Many of the explanatory variables have effects on the probability of changing occupations. Younger people are more apt to change occupations. Training for further employment seems to have a positive effect on the probability of changing occupation as expected. Members of the UI funds (i.e. members of the labour unions) are more prone to change occupations. The demand for labour in the area of residence of unemployed persons seems to increase and the occupational demand in the whole country seem to strongly decrease the probability of changing occupations. Rich people have a lower probability of changing occupations. The replacement ratio of unemployment benefits has a negative effect on the probability of changing occupation. The UI system seems to induce that unemployed persons are more likely to avoid taking a different sort of job that pays less and is less productive than their usual one.

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Appendix. Variables of the data

Duration of unemployment is calculated in weeks and it is the difference between the date of entry into unemployment and the date of returning back to work. Mean = 15.03.

Number of children is the number of unemployed person's children who are younger than 18 years old. Mean = 0.23.

Married is a dummy variable, 1=yes. Mean = 0.37.

Sex is a dummy variable, 1=male. Mean = 0.54.

Age is measured in years. Mean = 31.2.

Level of education is a dummy variable, 1 = at least 12 years of education. The level of education is based on the education code of the Central Statistical Office of Finland. Mean = 0.45.

Training for employment is a dummy variable, 1 = The person has got training for further employment. Mean = 0.15.

Member of UI fund is a dummy variable, 1 = yes. Mean = 0.42.

Came from schooling is a dummy variable, 1 = The person has come from schooling or from the army. Mean = 0.13.

Came from home is a dummy variable, 1 = The person has come from home or elsewhere outside the labour force.
Mean = 0.07.

Geographical demand describes the geographical rate of jobs available. It is the number of vacancies divided by the number of job seekers in the area. Mean = 0.10.

Occupational demand describes the occupational rate of jobs available in the whole country. It is the number of vacancies divided by the number of job seekers in the occupation group. Mean = 0.12.

Taxable assets has been compiled from the tax register and it is measured in millions of marks. Mean = 0.011.

Replacement ratio is unemployed persons average replacement ratio of unemployment benefits during the unemployment period after tax. Average weekly unemployment benefits after tax have been divided by the average weekly income in 1985 after tax. Mean = 0.17.

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